

Before the Middle Ages

FROM THE FIRST SETTLEMENTS TO THE FALL OF THE
ROMAN EMPIRE

General aspects

Trends spanning antiquity and the present

1. Limits to growth

1. organic economies
2. limited production and spread of useful and reliable knowledge

2. **Globalisation** (Extension of the depth and reach of trade)

3. **Monetisation** (extension in money-based exchanges)

4. **Population growth** => Urbanisation

5. **Specialisation** (Smith) => Complexification

6. **Financialisation** (with some fluctuations)

7. **Legalisation** (towards a rules-based economic order)

8. **Fluctuating insecurity**

- Political
- Institutional
- Environmental (punctual and fundamental (malthusian traps))

=

Did the ancient economy grow ?

- o Current consensus (Hopkins & Saller)
 - o « cellular self-sufficiency » but with modest growth from 1000BC to 200AD and subsequent decline
 - o Ex: 0,1% per capita growth in Greece 800-300 BC and the Western Roman Empire 200 BC-100 AD (=> +25% in per capita consumption!)

Ancient Mediterranean economies can be seen as « advanced organic economies », resulting from slow long-term progress and marked by « efflorescences » of varying length

Efflorescences of growth (Goldstone)

Periods of remarkable but unsustainable economic growth in the pre-industrial era.

Why unsustainable?

- energy scarcity
- difficulty in sustainably producing and exchanging useful and reliable knowledge
 - Little information circulation (no printing, very limited literacy) => high transaction costs

Population

Demographic conditions

Birth and death

- High fertility (4,5-6,5 children/woman)
- High mortality < low life expectancy at birth (20-30 years)

Overall stability in numbers

- short-term variations mainly through preventive checks on fertility
- Very slow net growth over time: 0,1% overall (0,07% in the East) from 1200 BC to 200 AD
- In Europe, peak 200 AD followed by crisis. Level reached again in 10-12th centuries.

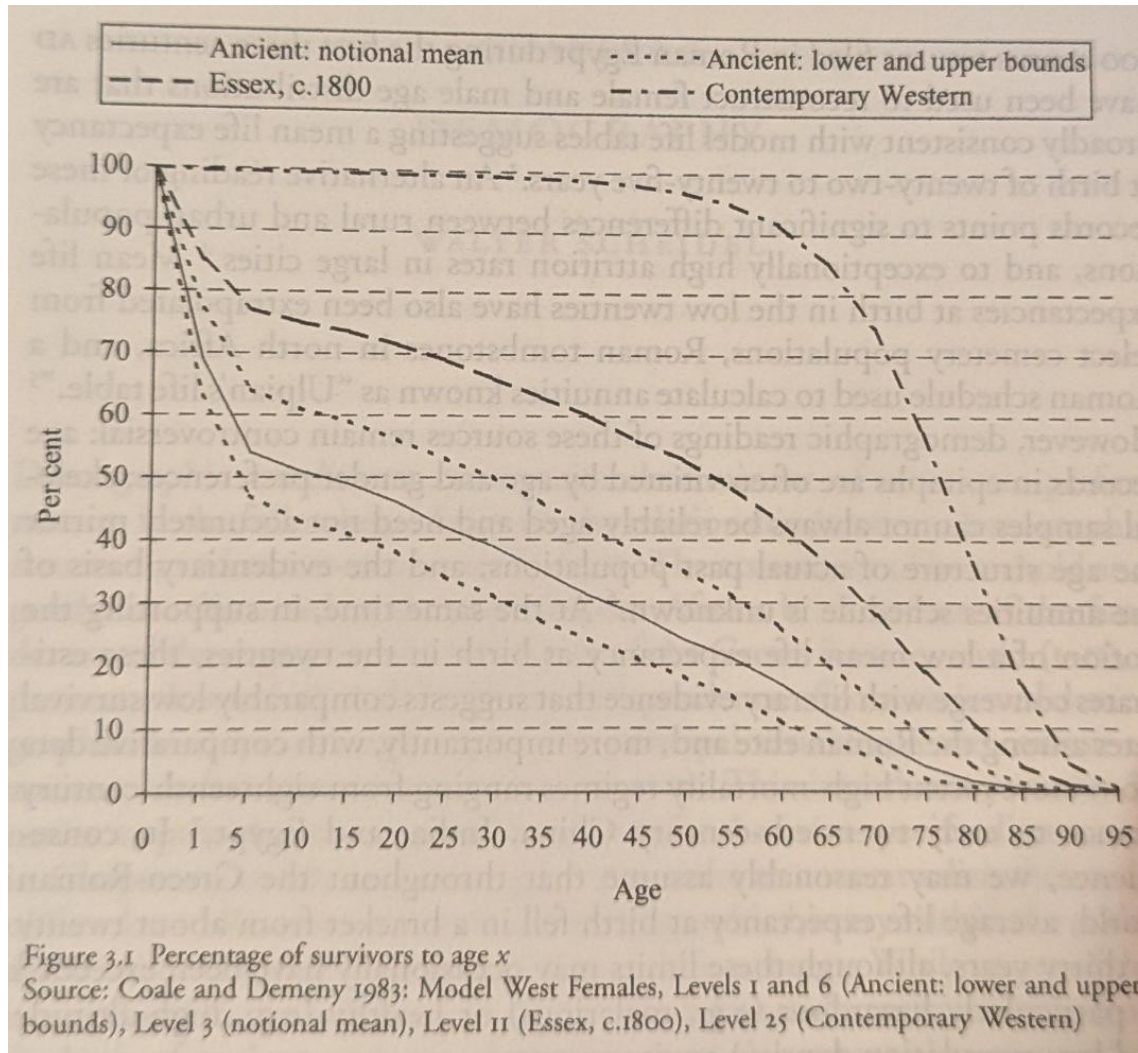


Table 3.1 *The estimated population of the Roman empire in AD 165*

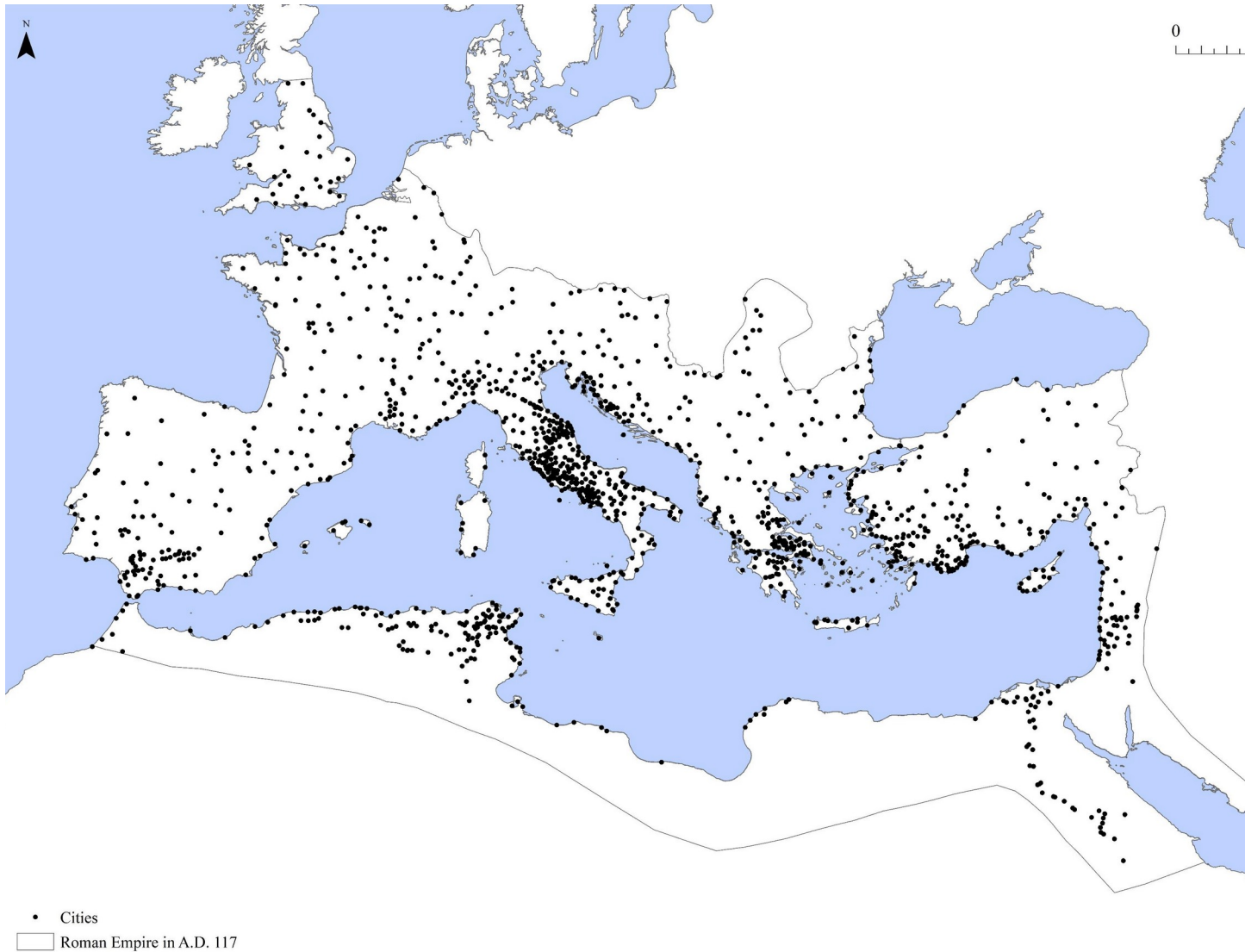
Region	Population (in millions)	Area (in km ²)	Population density (per km ²)
Italy & islands*	8–9 (?12–13)	310,000	26–29 (?39–42)
Iberia	7–9	597,000	12–15
Gaul & Germany	9–12	680,000	13–18
Britain	1.5–2	160,000	9–13
Danubian region	5–6	660,000	8–9
Greek peninsula	2.5–3	161,000	16–19
✓ European provinces	33–41 (?37–45)	2,568,000	13–16 (?14–18)
Anatolia	9–10	650,000	14–15
Greater Syria**	5–6	140,000	36–43
— Asian provinces	14–16	790,000	18–20
Egypt	5–6	30,000	167–200
North Africa	7–8	415,000	17–19
— African provinces	13–14	445,000	—
Total	59–72 (?63–76)	3,800,000	16–19 (?17–20)

* Sicily, Sardinia and Corsica

** Including Cyprus

Demography: regional variations

- Little long-distance voluntary migration, compared to the effects of slavery
- Higher development and population density in the Eastern Mediterranean



Urbanisation (I)

Urbanisation rate remained low

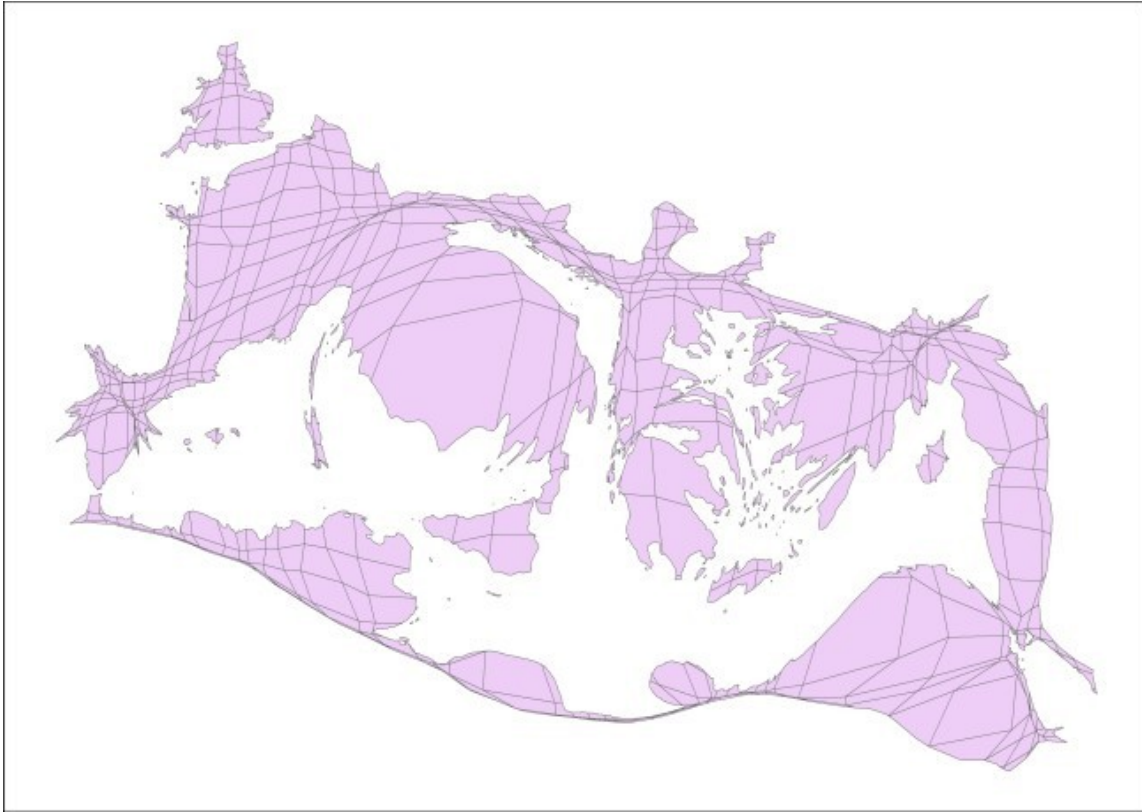
- slow and limited urbanisation process, starting east with a gradual westward spread
- Ancient Greece: 50% but many “agro-towns”
- Rome: 1/8 or 1/9 of total population

Determinants of urban development

- size of cities' **catchment area**, increased by access to river & maritime transport (e.g. Egypt)
- Political role

Source: Hanson, J. W. (2016). "Cities Database"

Urbanisation (II)



Cartogram of the estimated populations of cities in the Roman world in the Imperial period (after Hanson 2016 and Hanson and Ortman 2017).

- o **Small cities** are the norm
 - o Classical Greece: 50% larger than 2000 pop, 15% larger than 5000 => Urban-rural permeability
 - o 3rd c. BC rise of metropolises: Rome, Alexandria & Antioch above 100.000
 - o 2nd c. AD peak: Alexandria 500.000, Rome 1 million
- o Nevertheless, a remarkable peak
 - o Rome unsurpassed in Europe before London, 1800
 - o Urbanisation of Roman Empire = contemporary Han & Europe in 1300-1500

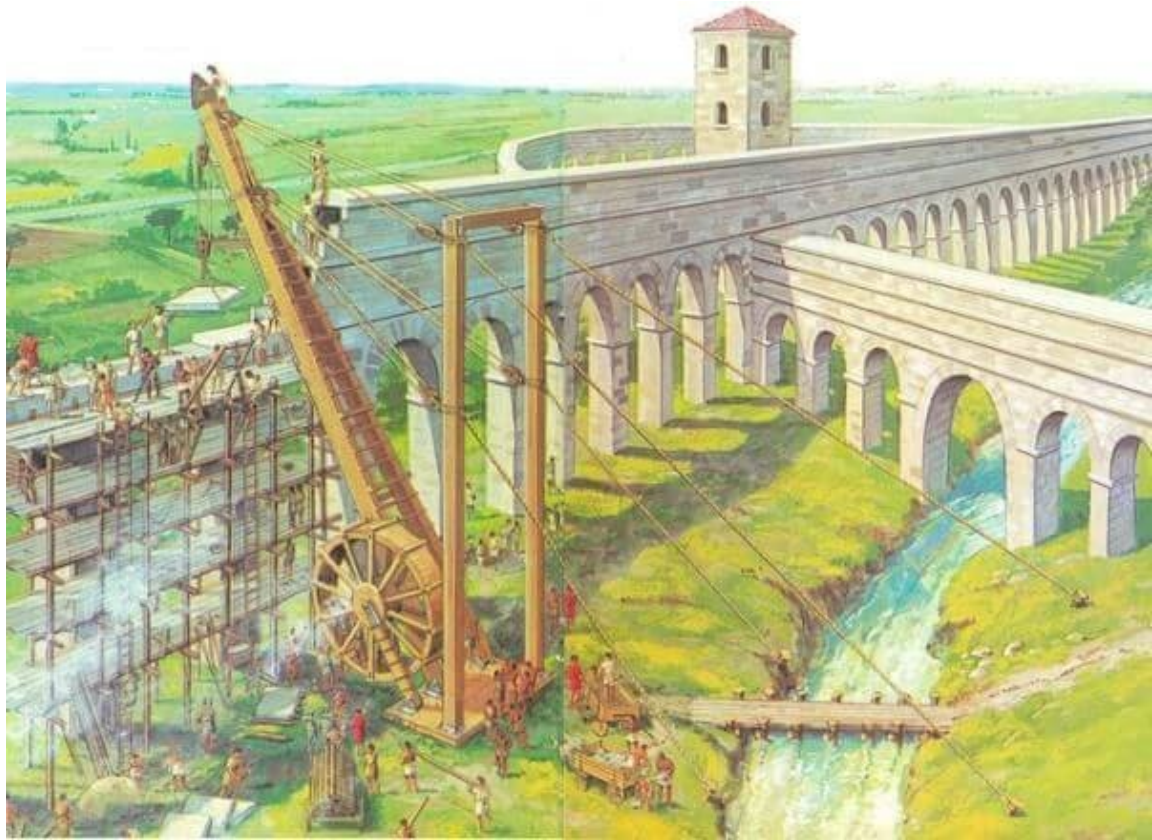
Urbanisation (III)

- o Origin of the ancient city
 - o Ancient Greece: emergence of local government and rentier classes
 - o Imperial Rome: centres of tax and rent perception and conversion
- o “Consumer city” or “producer city” (Weber & Sombart)?
 - o Greece: Weber’s “farmer-citizen city”
 - o Roman empire: predominance by landholding rentiers => “Parasitical”?
 - o Current consensus: “parasitical” and stimulating
 - o rentier nature, but
 - o stimulating crafts and trade
 - o Growing rural-urban exchange
 - o useful as safety valves in high-fertility regimes

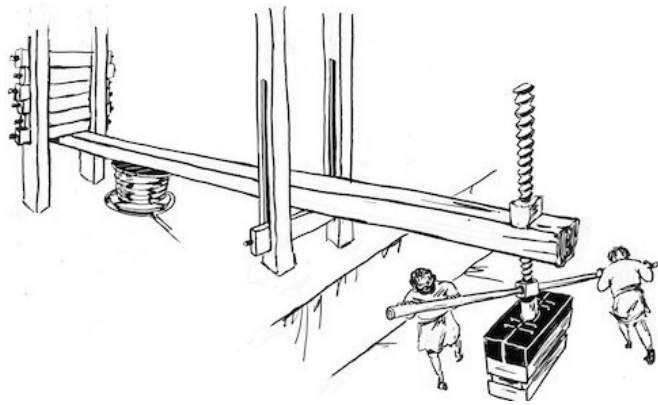
Technology

PROGRESS, ALBEIT SLOWLY

Technology (I): systems



- o Four fundamental characteristics
 1. Organic economy: the vast majority of inputs have an agricultural origin
 2. Ancient technology is tool-based (machines are the exception)
 3. Human and animal muscle remained the main sources of energy
 4. Stability: slow evolution and slow spread of innovations

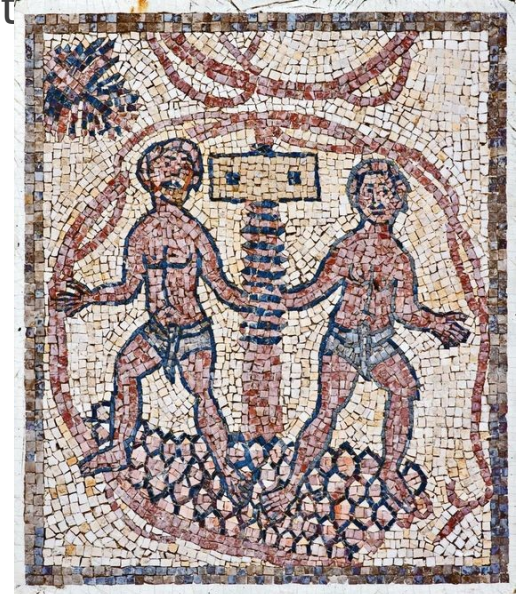
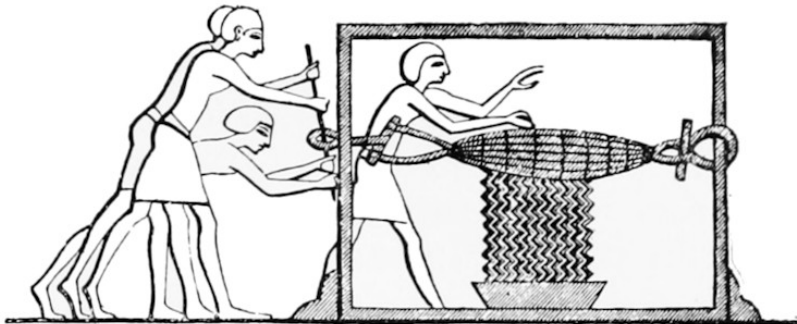


Technology (II): innovation



- o **Means mean innovation:** small-holding >< latifundia
 - o Small, largely self-sufficient farm units clung to traditional techniques by lack of means
 - o Large, profitability-oriented Roman estates had access to scale and motivation for innovation

- o Example: oil & wine presses
 - o Manual activity in smallholdings
 - o Heavy investment in large press infrastructures in latifundia



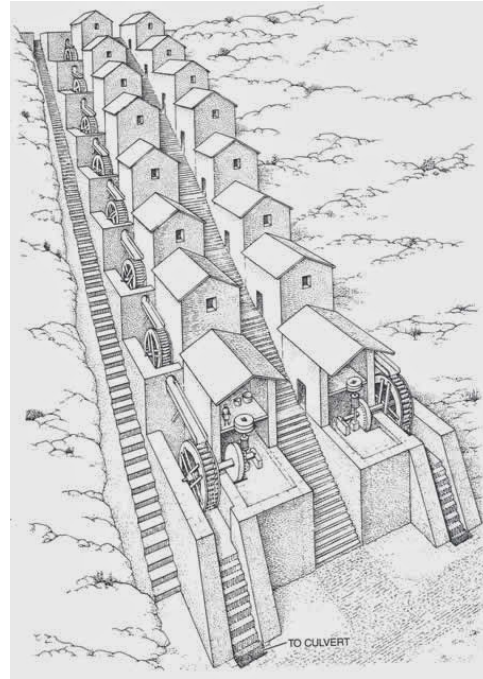
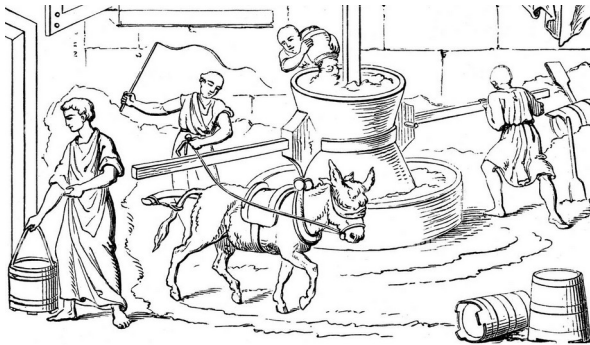
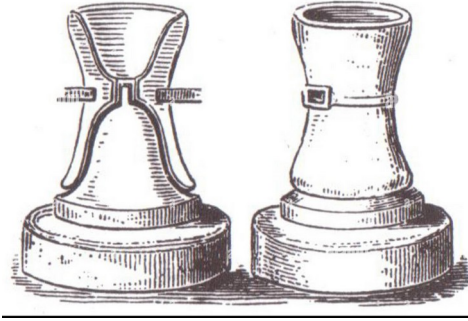


Technology (III): the “shock of the old”

- o **Old and modern techniques coexisted**, often in the same areas
 - < Low levels of literacy & cost/scarcity of technical literature
 - < Low mobility of people & goods
 - < High (sunken) cost of complex infrastructure (ex: oil/wine presses)
- o !! Perception dependent on archeology.
 - o E.g. oil/wine transportation: permanence of amphorae and lacking evidence from gourds or barrels



barrel found Buried at Antonine Wall, 155 AD
own: Monte Testaccio, amphora dump used in 1st-3rd c. AD



Ex: mill technology

- o Dominance of human and animal muscle power
- o 4th century emergence of the water wheel, foundation of Medieval technological system
 - <= ex: Barbegal (low right)

Technology (III): intensive growth?

- Did Ancient technological progress generate per capita growth?
 - Yes: technology spread, albeit slowly and partially
 - But its impact was limited: machines never replaced tools or manual production. Progress was mostly Smithian, by a division of labour into many individual operations (vertical specialisation) and across many craftsmen and workshops (horizontal specialisation)

Technological change in antiquity never fundamentally changed production in agriculture and craft, and never increased productivity to the point where it could induce changes in the socio-economic structure

Ancient Egypt

3000-30 BCE

Early Dynastic Period 3150-2686

Old Kingdom 2686-2181

First Intermediate Period 2181-2055

Middle Kingdom 2055-1650

Second Intermediate Period 1650-1550

New Kingdom 1550-1069

Third Intermediate Period 1069-664

Late Period 664-332

Greco-Roman Period

330 BCE-641 CE

3000 BCE

2500 BCE

2000 BCE

1500 BCE

1000 BCE

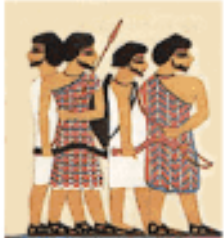
500 BCE



Narmer
3000



Great Pyramid of
Giza 2560



Hyksos Conquest
2050-1900

Queen
Hatshepsut
1480



Nefertiti and
Amenhotep
1353-1336



Assyrian Conquest
677

Cleopatra
69 BCE-30 CE



Ancient Egypt Timeline

Golden Ages

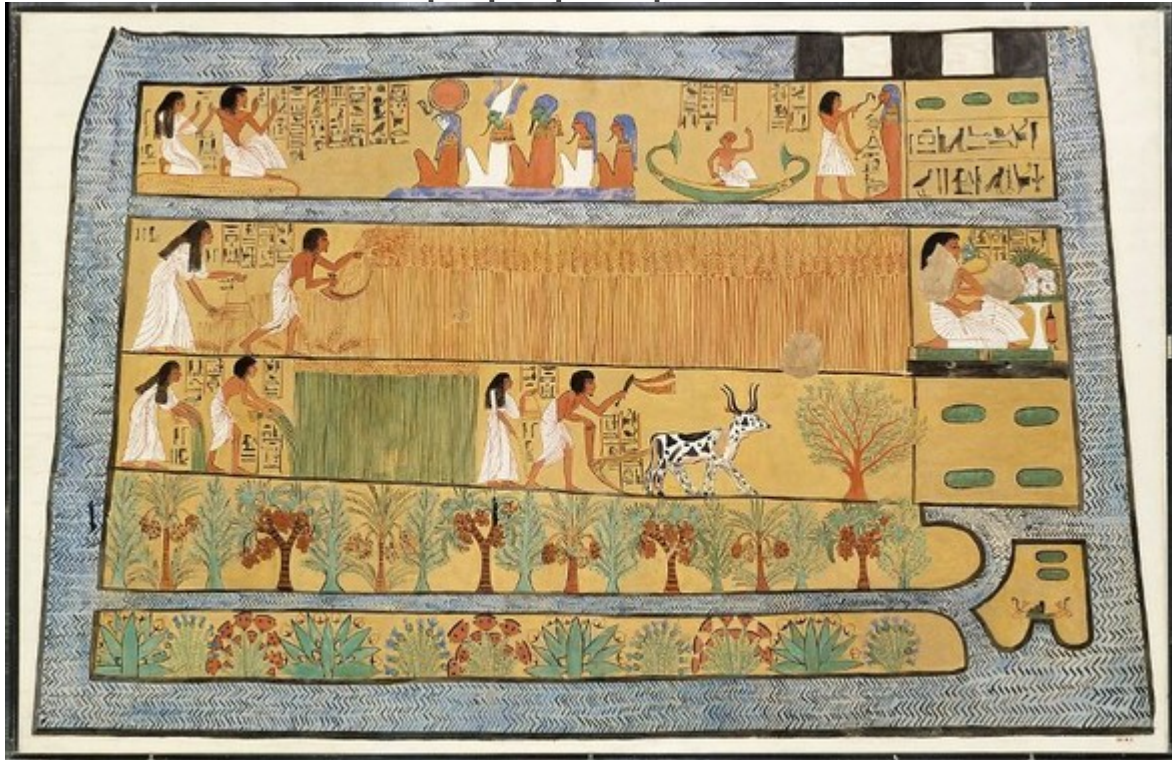
Intermediate Periods

Early and Late Periods

Greco-Roman Period

A slow increase in documentation

- Steles, temple walls, written records
- Writing's use slowly spreads and its use increases the documentation of



Tomb in Deir El Medina, New Kingdom, 1550-1070 B.C.

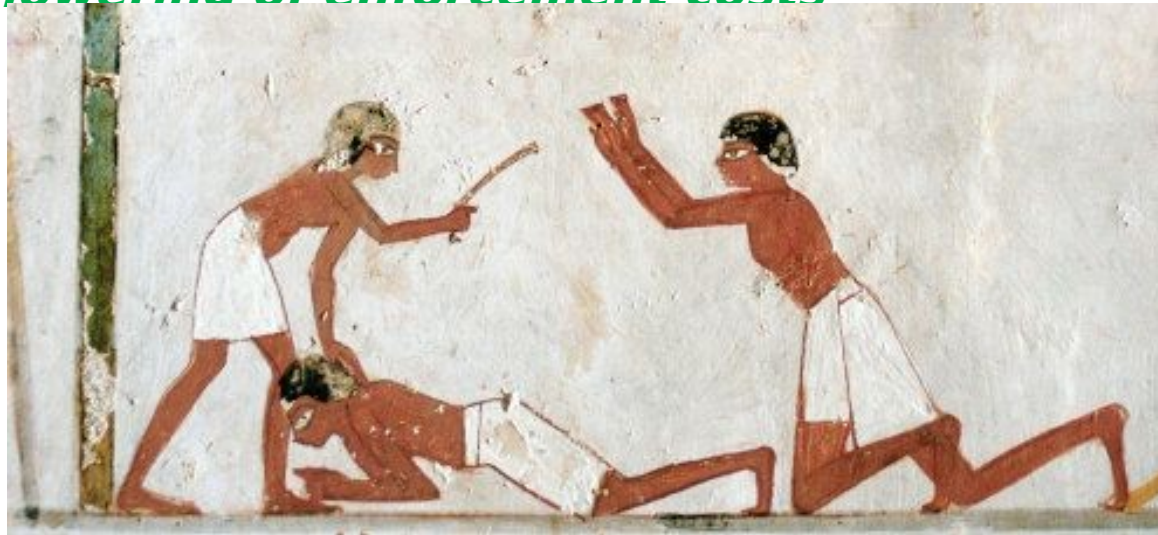


Reliefs from the Tomb of Nespekashuty, Late

Documentation for official use

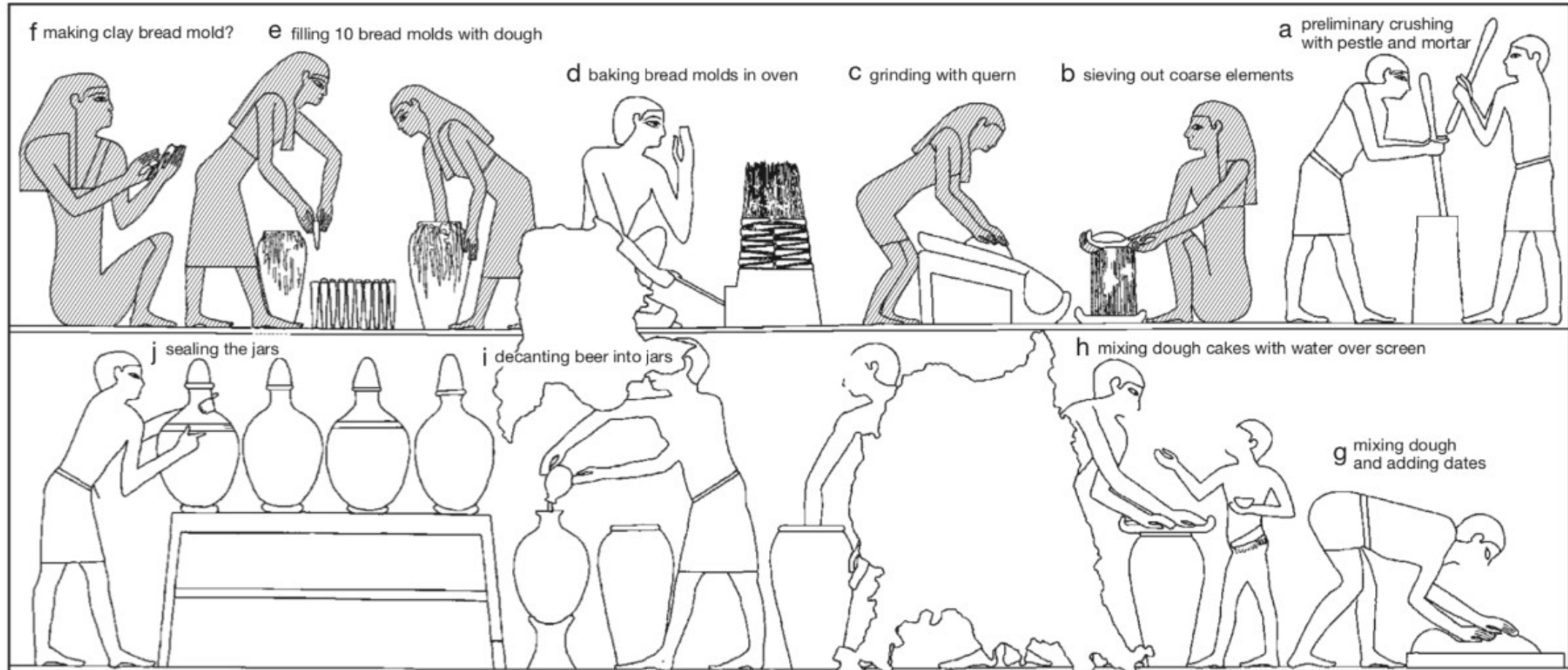
- A slow increase in the use of writing in the economy for efficiency purposes
 - 3rd millennium BCE: documentation of collective tax obligations
 - 2nd millennium BCE: documentation of individual tax obligations
 - 1st millennium BCE: written documentation of seizable and taxable private transactions

=> *Slow lowering of enforcement costs*



Tax farmer and payers, Tomb of Menna, New Kingdom, 18th B.C.

An agrarian economy based on grain



Media of exchange: from barter to coins

- Current use of money: measure of **value**, medium of **exchange** and of wealth
- Egypt: slow evolution from « quasi-money » (commodities), to near-modern coins
 - 3rd millennium BCE: grain, cloth and copper
 - 2nd millennium BCE: gold and especially silver become more common
 - 6th century BCE: Greeks introduce silver coins, adopted locally (5th-4th c. BCE) and supplemented by bronze (late 4th c. BCE)



Gold stater of Nectanebo II, 360 BCE

*Silver tetradrachm of Ptolemy IV Philopator,
minted ca 214-212 BC*



- Coins lower information costs, but their use in Egypt was based on weight
=> **Silver** (more than coins) transformed the economy by allowing the state to broaden its fiscal reach, extracting not only harvest and labour, but also bottleneck and capitation taxes



*Ramses II leading his army south
Agricultural scene (-1401 -1390BC)*

A command economy

- The dominant principle is **taxation** and **redistribution**, for three millennia
 - Work of Royal Granaries and temples (outsourcing)
 - Markets grow in importance with the use of silver as a medium of exchange (1st millennium BCE)
- No profit-maximising corporations. « Entrepreneurship » emerges from state and temples.
 - Expeditions (military, trade, mining or a mix)
 - Foundations (settlements, temples, funerary)
 - Only one, limited episode of higher prevalence of private entrepreneurship during the third intermediary period (1069-664 BCE), due to the fragmentation of the state



Labour

- o Predominance of agrarian activities, supplemented with other sources of income (ex: soldiers)
- o The production and transportation of cloth, beer, papyrus... is done by crews of craftsmen dependent on the state/temple for inputs and salaries
- o Long-term employment for skilled labour
- o Compulsory obligations for unskilled labour
- o Short-term employment emerges late 1st millennium BCE with the use of coins

<= *Two men splitting papyrus*

20th century depiction of Papyrus production



An exception?

- Close state-led Mesopotamian economy
 - BUT, not as meritocratic/egalitarian: families create dynasties capturing state power and using it for private profit
 - Ex: Hammurabi code recording
 - The salary (in kind: beer, textile and bread) of civil servants
 - Interest-bearing loans
- ⇒ A favourable institutional set-up in certain conditions?
 - Low transaction protection
 - Low monetisation
 - High transportation costs
 - High official coercion power

The Graeco-Roman World

3000 BCE – 476 AD

The Aegean Bronze Age (3000-1200 BC)

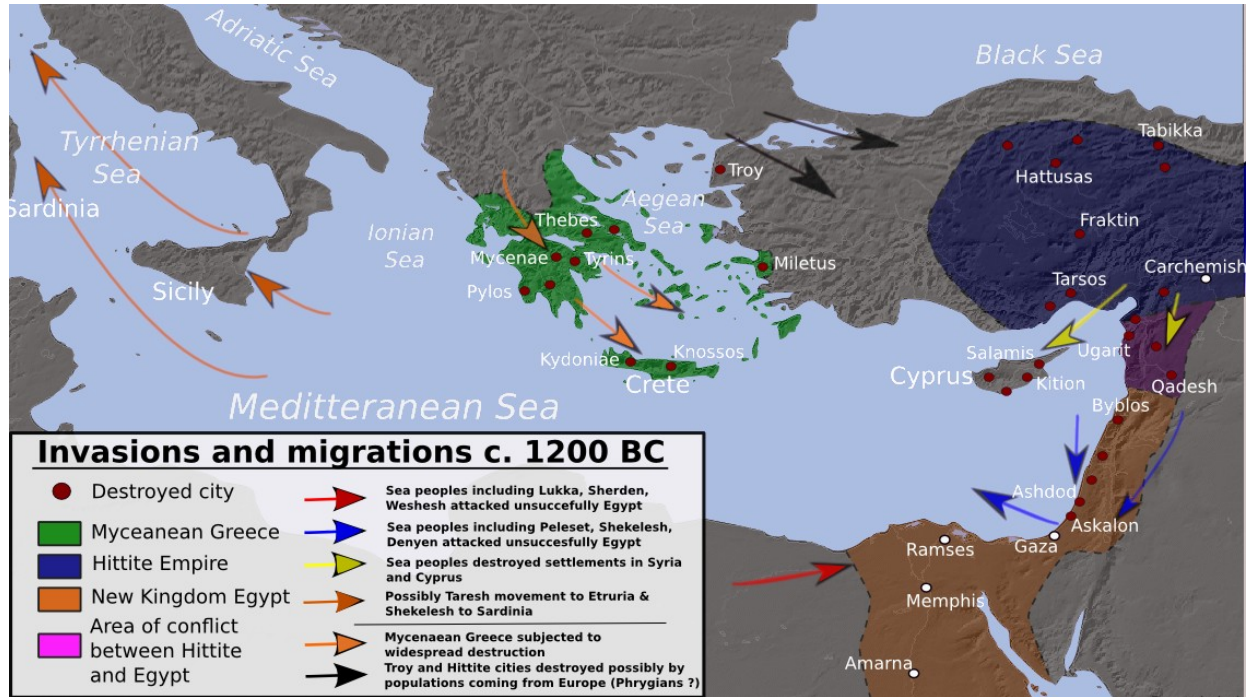


- 3000 BC: Greece fully occupied by agriculturalists relying on the “Mediterranean triad” (olives, vines and grain)
- 2000 BC: emergence of redistributive “palatial” societies in Crete (Knossos) and, 500 years later, on the mainland (Mycenae...)
- Populations reach +/- 15.000 inhabitants in Knossos around 1500 BC, 6000 in Mycenae around 1300 BC
- Trade of luxury items (metal, alcohol) between palaces and with areas from Sicily to Mesopotamia
- Abrupt end with crisis of the Early Iron Age

MEDITERRANEAN TRADE IN THE LATE BRONZE AGE c. 1400-1200 BCE



The Iron Age (1200-700 BC). The Greek Dark Age



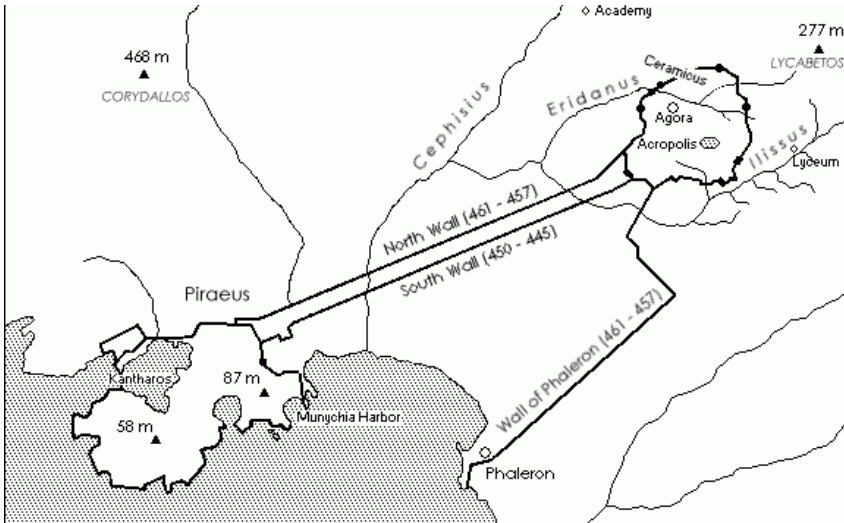
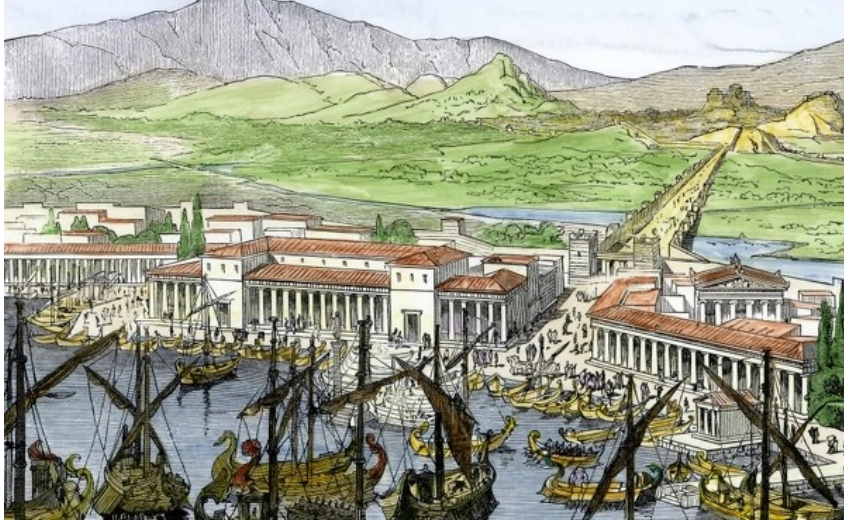
- o 12-11th c. collapse
- o Population decrease to half or one quarter
- o Deurbanisation: abandoned cities, new settlements of max 1.500 inhabitants in refuge sites
- o Loss of material skill (writing!)
- o Loss of living standards
- o Loss of (commercial) contacts beyond the Aegean
- o Causes uncertain: disasters, epidemics, invasions?



Ulysses and the Sirens, John William Waterhouse, 1891

700-500: Archaic Greece, a slow takeoff

- A civilisation in progress
 - Population growth of 0,5%/annum
 - Products (pottery, housing) of higher quality
 - Invention & spread of Greek **alphabet**
 - Growing interconnection of the whole Mediterranean
- Slow democratisation (ex: Solon's 6th c. reforms)
 - Institutions giving more voice to free male citizens
 - Commodification >< aristocratic mores (symbolised by the beginning of coinage)
- But: increase in forced labour



Classical Greece: Trade

- Increase in availability of imported wares
 - Luxury products
 - Foodstuffs (from grain to fine wines)
 - Productive goods (timber, minerals)

- Powered not by technological progress but by
 - Increased individual and collective wealth
 - Urbanisation
 - Institutional arrangements favoured by shared cultural norms

Classical Greece: Monetary finance



- o Emergence of banks (trapeza)
- o Emergence of a financial sector bent on supporting maritime trade
 - o Credit: “Bottomry loan” secured on the vessel or cargo
 - o Insurance contracts
 - o Contracts ignoring state boundaries
- o Ex: DEMOSTHENES’ (384-322BC) inheritance
 - o a sword factory of 32 slaves
 - o a sofa factory of 22 slaves owned as a security for a debt
 - o a portfolio of debts and deposits, in total worth 8 talents and 4000 drachmae (compound interests!)

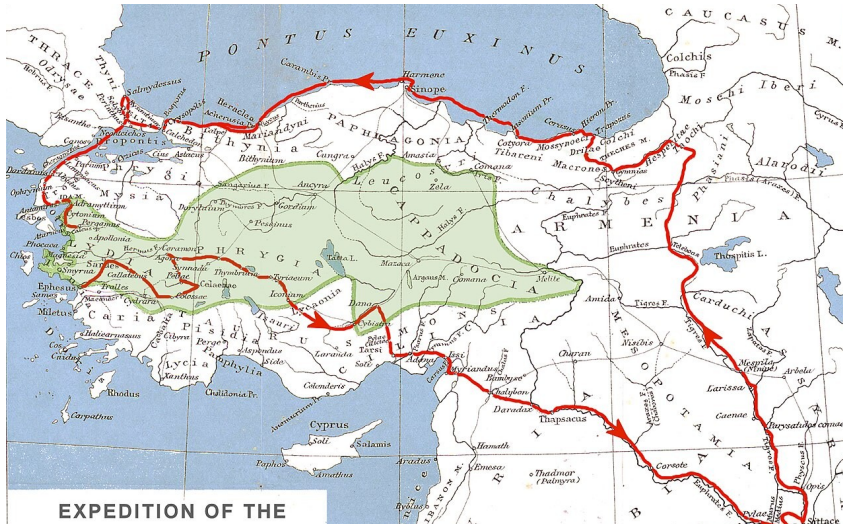
Xenophon's oeconomicus

Explains the ideal management (*nemein*) of a wealthy household / estate (*oikos*)

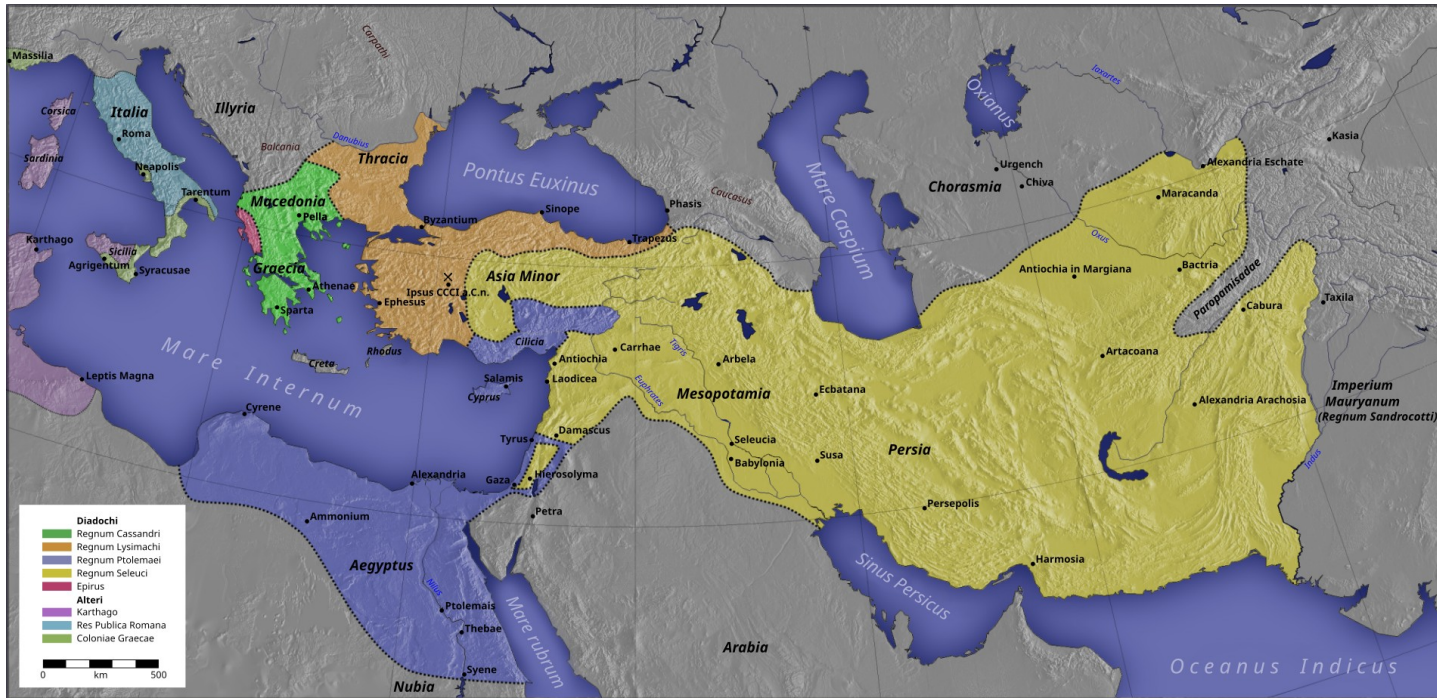
- Management made by wife and (slave) housekeeper,
- Labour force comprised mainly of slaves
- Management oriented to the increase of the estate
- Strong moralist orientation (work ethos)

<= up: Xenophon's expedition of the 10.000 described in his *Anabasis*

Down: Hoplite phalanx drawn in *300* by Frank Miller, 1999

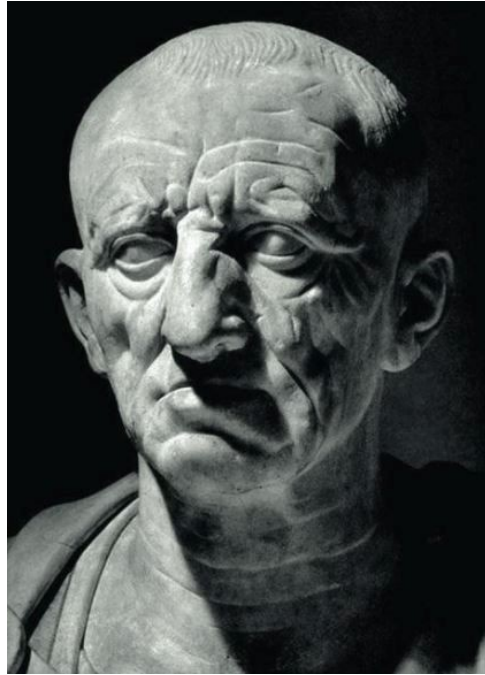


323-30 BC: The Hellenistic period



301 political situation of the Eastern Mediterranean after the death of Alexander

- Spread of Greek mores across Alexander's empire
- Monetisation (and the assorted problem of change)
- Greek, language of commerce
- Spread of urbanisation
- BUT Powerful Hellenistic states => predatory attitudes



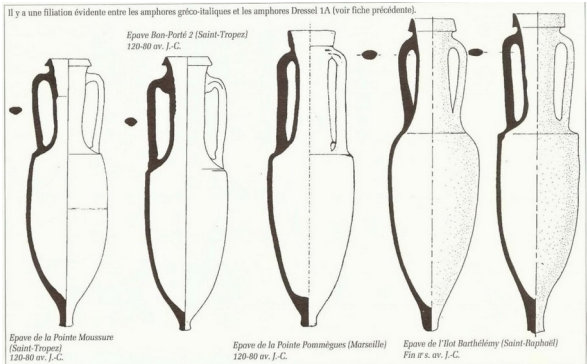
The Roman Republic (509-27 BC)

An agrarian economy

- small-holding peasantry (*ager publicus*)
- Elite of large estate owners
- Growth of the city of Rome, helped by food subsidies (cf. *Annona*)

Deeply changed by the Republic's conquests, and the second Punic war (218-201),

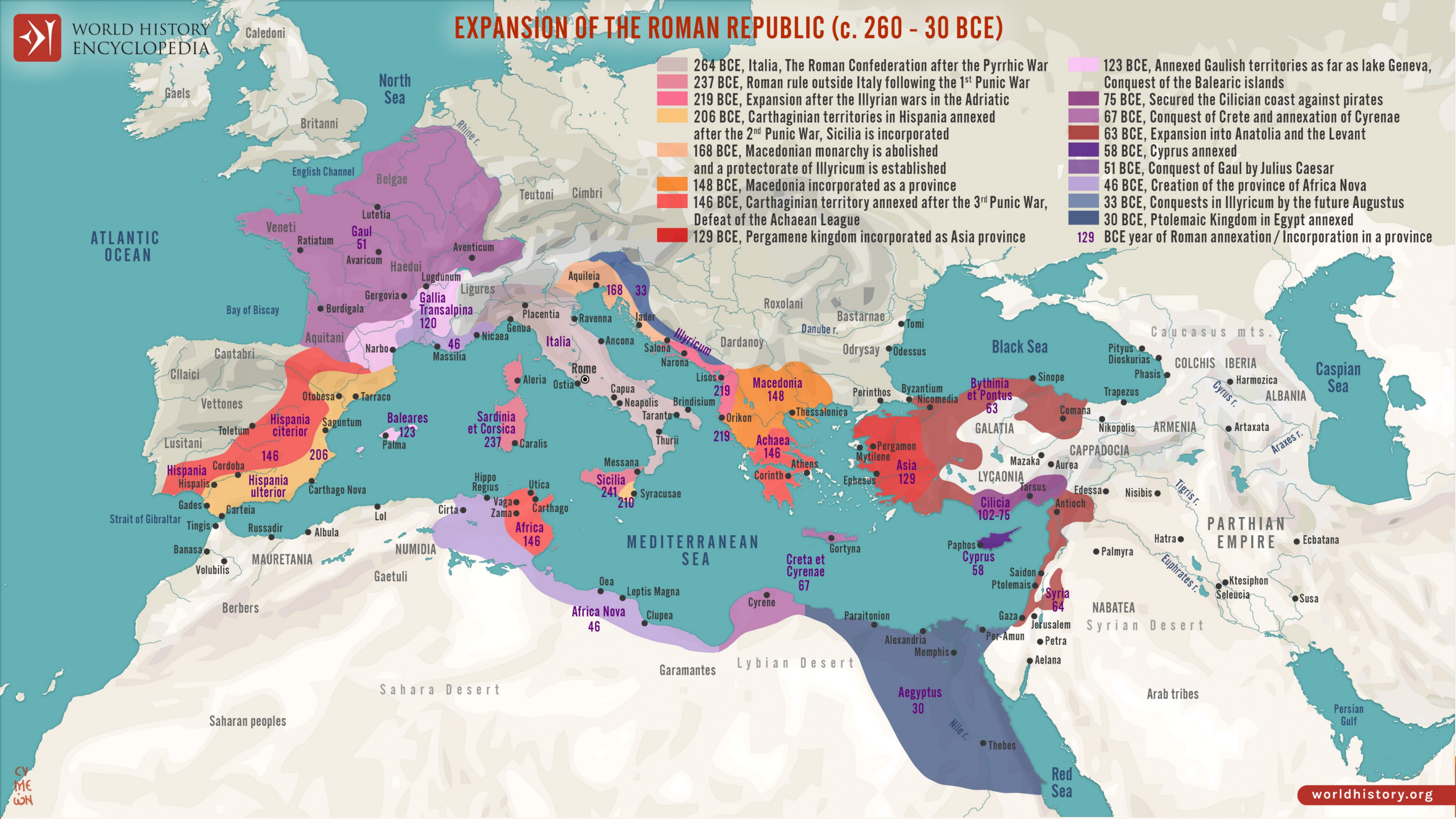
- Plunder-based monetisation
- Emergence of the “**slave mode of production**”
- Expansion of trade infrastructure
- Mass-production of amphorae
- Expansion of commercial agriculture





EXPANSION OF THE ROMAN REPUBLIC (c. 260 - 30 BCE)

- 264 BCE, Italia, The Roman Confederation after the Pyrrhic War
- 237 BCE, Roman rule outside Italy following the 1st Punic War
- 219 BCE, Expansion after the Illyrian wars in the Adriatic
- 206 BCE, Carthaginian territories in Hispania annexed after the 2nd Punic War, Sicilia is incorporated
- 168 BCE, Macedonian monarchy is abolished and a protectorate of Illyricum is established
- 148 BCE, Macedonia incorporated as a province
- 146 BCE, Carthaginian territory annexed after the 3rd Punic War, Defeat of the Achaean League
- 129 BCE, Pergamene kingdom incorporated as Asia province
- 123 BCE, Annexed Gaulish territories as far as lake Geneva, Conquest of the Balearic islands
- 75 BCE, Secured the Cilician coast against pirates
- 67 BCE, Conquest of Crete and annexation of Cyrenae
- 63 BCE, Expansion into Anatolia and the Levant
- 58 BCE, Cyprus annexed
- 51 BCE, Conquest of Gaul by Julius Caesar
- 46 BCE, Creation of the province of Africa Nova
- 33 BCE, Conquests in Illyricum by the future Augustus
- 30 BCE, Ptolemaic Kingdom in Egypt annexed
- 129 BCE year of Roman annexation / Incorporation in a province



The slave mode of production

- All types of profiles/qualifications
- A transformation of economy and society
 - Favoured concentration
 - From small farms to large estates
 - From independent artisans to salaried employees
 - Long-term impediment to mechanisation
 - Regular slave revolts
 - Effect on foreign policy
 - Pushed for slave-generating wars
 - Decline of slavery with the end of Roman expansion



Retiarus mosaic, 3rd c. AD



Ancient Slave market – G. Boulanger, 1882



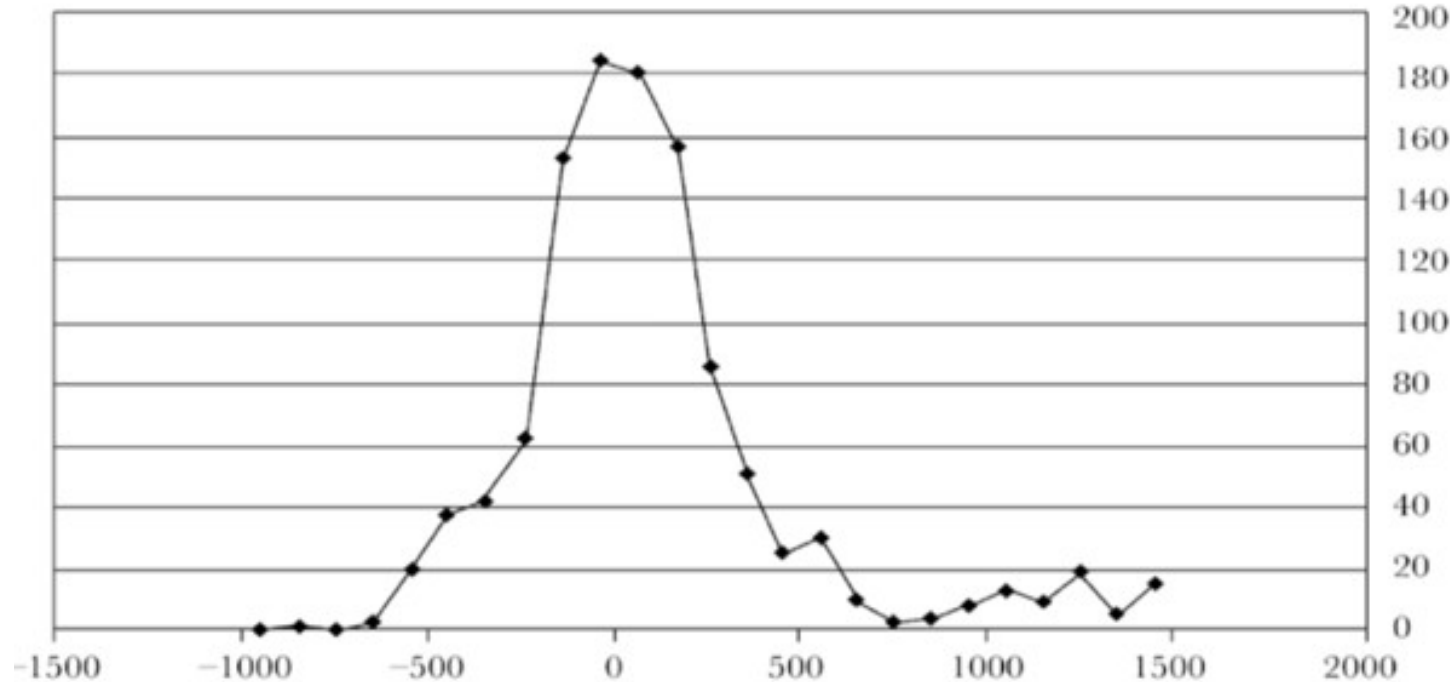
assassination of Tiberius Gracchus, 133 BC



Late Roman Republic

- 2nd c. onwards: major increase in production (ex: copper residues in Greenland)
- Political unification: favoured a limited spread of technology
- Mixed security situation.
 - Conquests: security favouring maritime trade
 - But a republic in crisis:
 - Rising inequality => political instability and failed reforms
 - Massive influx of slaves => slave revolts
 - Influence of Greek monarchism, decline of Republican institutions and ambition of the elite => civil wars

The Roman Empire (27 BC-476 AD) I



Graph 1: dated shipwrecks (from De Catalaÿ 2005)

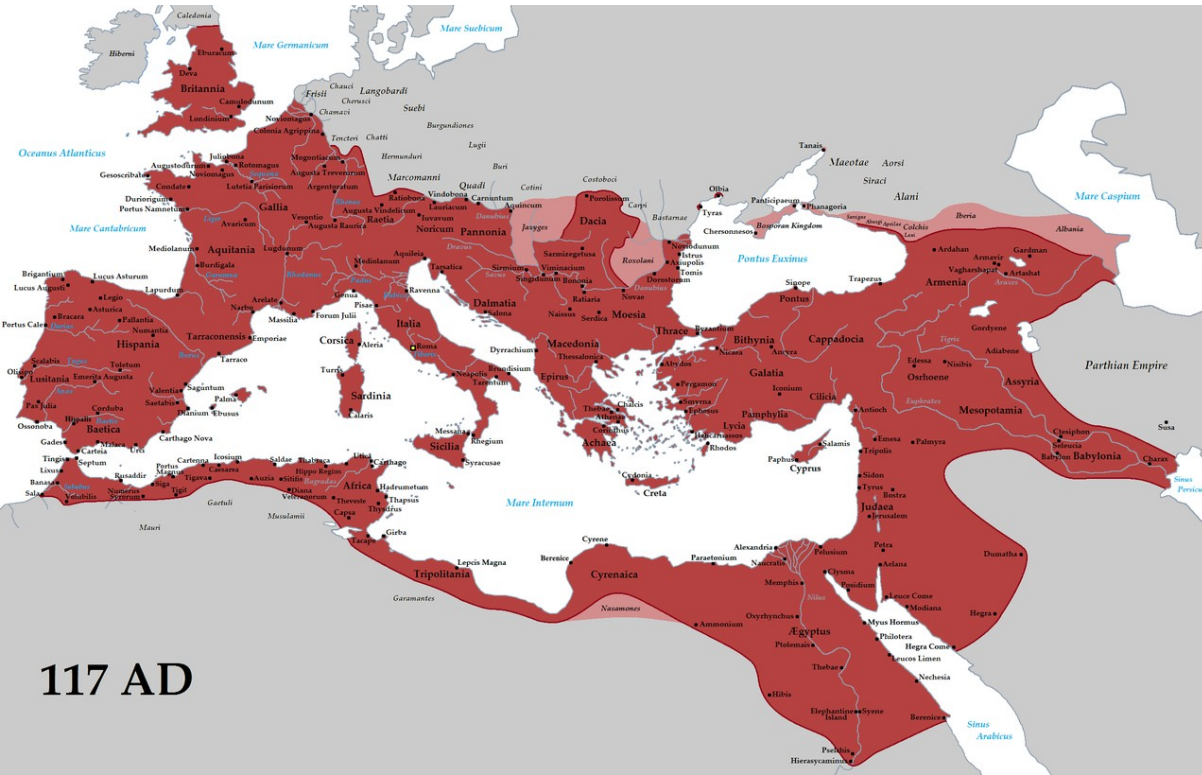
Continuity with the Republic

- Modest growth of production and overall consumption (followed by stagnation)
- Elites focused on land ownership
- Spread of urbanisation
- growth of the city of Rome to its apex

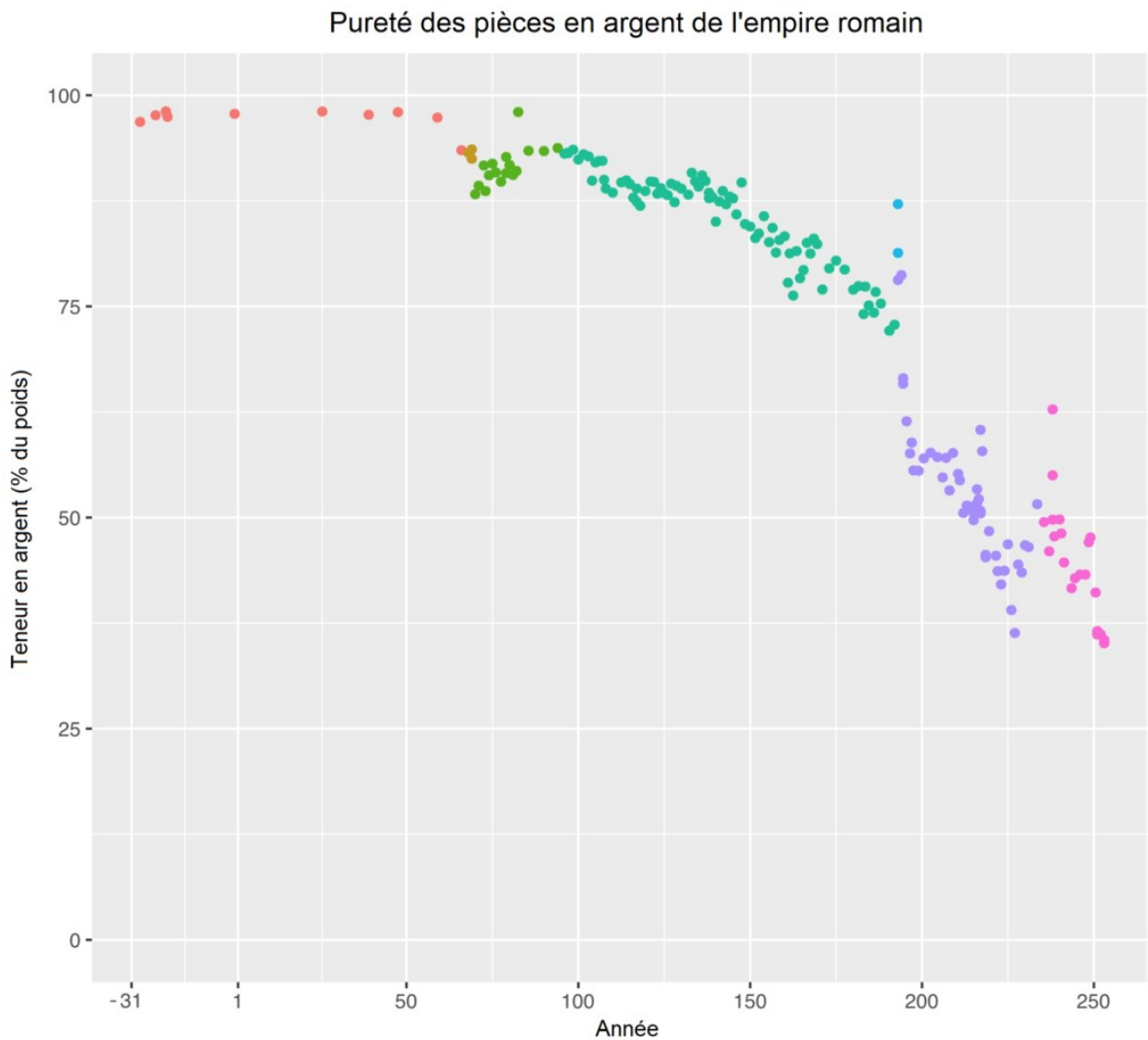
The Roman Empire (27 BC-476 AD) II

Contrast with the Republic

- Pax Romana, Mare Nostrum & state favouring movement of
 - goods
 - Diseases (2nd c. Antonine Plague)
 - Ideas (Christianity)
- Deepening of legal framework
- Development of frontier areas to self-sufficiency
- Increased demand for ceramics & trade => emergence of manufacturing enterprises
- Growth of inequality: large estates > < imperial estate
- Development of the imperial administration



117 AD



The 2nd c: apex and first cracks

- o **Maximum expansion** reached in 117 => transition to (costly) defensive wars
 - ⇒ End of wars of expansion => main source of slave labour dries up
 - ⇒ Increased fiscal pressure
 - ⇒ first currency debasements
 - ⇒ first waves of inflation
- o **Antonine plague** (165-180): smallpox kills 10-15% of the population
- o Transition to an authoritarian empire, dominated by the army

Trade in the Roman Empire, A.D 200

Trade goods



Roman Empire, A.D 200



The third century crisis (235-284)

- o **Political crisis:** almost 50 emperors in 50 years
- o **External crisis:** wars against Germanic tribes and Persians
- o **Economic crisis:**
 1. Wars and currency => heavy expenditure by the Roman state => strong debasement of the currency => hyperinflation and demonetisation
 - o Tried solutions: new currencies, price fixing (301, Diocletian)
 2. Wars and fiscal pressure => depopulation of the countryside => drop in agricultural production and tax revenues
 3. Wars and insecurity => plunder and disruption of trade, return to self-sufficiency
 4. Lack of prisoners of war => scarcity of slaves => attempts to tie free peasants to their land
 5. Epidemics (Cyprian plague) => population *at least* 20% lower than in 165



Peste à Rome, Jules-Elie Delaunay, 1869



The late Roman Empire (284-476)

Political developments

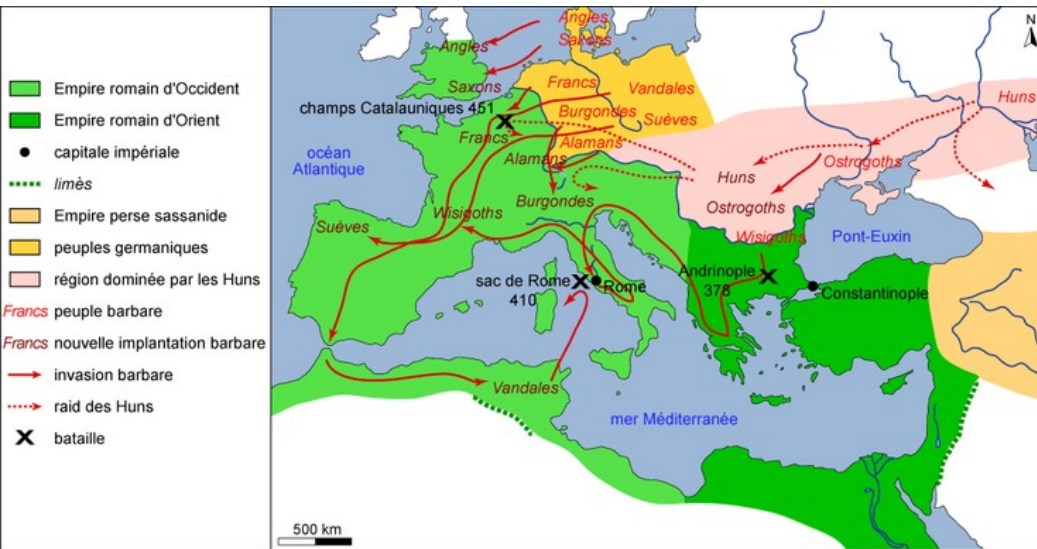
- Reunification under Diocletian (284)
- Religious unification under Constantine (Edict of Milan, 313)
- Definitive separation in two entities under Theodosius (395)

State of crisis => greater control by the state

- Reduced social mobility
- Replacement of private enterprise by imperial administration (e.g. *societas publicanorum*) or compulsory service

Decline of slavery and the villa, replaced by Colonatus

- Peasants tied to their land.
- Becomes hereditary in 332
- Goal: stabilising the workforce for tax purposes
- First steps towards medieval serfdom





The fall of Rome: continuity, break, transition?

oRupture

- o Political: break-up of the Western empire
- o Economic: de-urbanisation, demonetisation, de-globalisation

oContinuity

- o Structures of authority: church and Roman law
- o Social structures: fusion of elites and colonatus (evolution towards serfdom)
- o Continuation of the Eastern Empire

<= *Pope Leo III crowning Charlemagne. From Chroniques de France ou de Saint Denis, 14th c.*

Conclusion: a
remarkable
efflorescence

Was capitalism born during antiquity?

- o **First elements of future capitalism** did emerge:
 - o Development of markets (especially urban) and market-oriented producers (latifundia)
 - o Importance of wage labour
 - o Monetisation and legal protection
 - o State support through roads, order and the operation of mines for precious metal
- o **HOWEVER**
 - o Predominance of subsistence economy
 - o Widespread slave labour (brake on the development of labour markets)
 - o Drive to generate rents rather than capital
 - o Orientation towards booty and war rather than market success



Did globalisation start during antiquity?

- o Growing interconnections
 - o Trade of luxury products
 - o Ex: trade between Rome and Han China
- o Yet
 - o low impact on most daily lives
 - o Fragile progress, reversed at the end
 - o Slow spread of information, if

ins of Roman Trading Post. Arikamedu, Pondicherry, India. 2nd Century BCE

Product globalisation: beer in antiquity

- o Product of necessity, potentially at the origin of settlements
- o Slow spread of product and techniques
 - o 4th c. BC: Invented in Mesopotamia (current Iraq) and Egypt (3500BC)
 - o Fermented mixture (more than 70 types!) drank with a straw
 - o « Civilising » social role (e.g. Enkidu learning to drink beer in the Epic of Gilgamesh)
 - o Spreads slowly with agriculture
 - o in Egypt. Innovation: wort boiling
 - o across the Mediterranean
 - o across the Roman Empire where the climate didn't allow wine production (*ars cervesaria*)
- o But
 - o Too bulky for trade
 - o Limited by competition with wine